PATENT ABSTRACTS OF JAPAN

(11)Publication number : 09-080500

(43)Date of publication of application : 28.03.1997

(51)Int.Cl. G03B 5/00

(21)Application number : 07-229947

(22)Date of filing : 07.09.1995

(71)Applicant : NIKON CORP

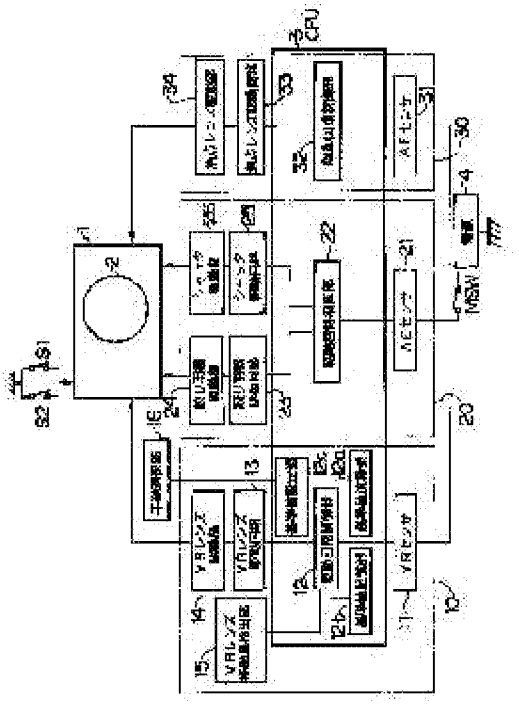
(72)Inventor : KITAGAWA YOSHITOSHI
IMURA YOSHIO

(54) BLUR CORRECTING DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To save a power consumption and to suppress the burdens on a CPU by selecting either of a calculated blur reference value, or a stored blur reference value in accordance with the remaining amount of a power source and the processing capacity of the CPU.

SOLUTION: In the blur correcting device 10, the relative value of the blur reference value is regarded as the blur correcting amount, and the optical axis of the blur correcting optical system is changed so as to correct the blur. The device is provided with a blur sensor 11 for detecting the blur and a reference value calculating part 12a for calculating the blur reference value, based on the output detected by the blur sensor 11. Besides, the device is provided with a reference value storing part 12b for storing the previously adjusted blur reference value of the blur sensor 11. Either of the reference value calculating part 12a and the reference value storing part 12b is selected by a reference value setting part 12c so as to set the blur reference value. The blur reference value is set, based on either of information on the remaining amount of the power source 4, information on the processing ability of the CPU, and manual input information.



Disclaimer:
This English translation is produced by machine translation and may contain errors.The JPO, the INPIT, and and those who drafted this document in the original language are not responsible for the result of the translation.

Notes:
1. Untranslatable words are replaced with asterisks (****).
2. Texts in the figures are not translated and shown as it is.

Translated: 04:38:56 JST 03/12/2008
Dictionary: Last updated 02/15/2008 / Priority: 1. Electronic engineering / 2. Mechanical engineering / 3. Mathematics/Physics

FULL CONTENTS

[Claim(s)]

[Claim 1] In the Bure amendment equipment which the amount of Bure amendments is calculated, and the optical axis of the Bure amendment optical system is changed based on relative Bure who detected, and the Bure fiducial point, and amends Bure BURESENSA which detects relative Bure, and the fiducial point operation part which calculates the Bure fiducial point based on the output detected by said BURESENSA, The Bure amendment equipment characterized by having the fiducial point memory part which makes the Bure fiducial point with which said BURESENSA was adjusted beforehand memorize, and the fiducial point setting part which chooses either said fiducial point operation part or said fiducial point memory parts, and sets up said Bure fiducial point.

[Claim 2] It is Bure amendment equipment characterized by said fiducial point setting part setting up said Bure fiducial point based on the information about the residue of a power supply in Bure amendment equipment according to claim 1.

[Claim 3] It is Bure amendment equipment characterized by said fiducial point setting part setting up said Bure fiducial point based on the information about the throughput of a central arithmetic unit in Bure amendment equipment according to claim 1 or 2.

[Claim 4] It is Bure amendment equipment characterized by said fiducial point setting part setting up said Bure fiducial point based on manual input information in Bure amendment equipment given in any 1 term from Claim 1 to Claim 3.

[Claim 5] In the Bure amendment equipment which the amount of Bure amendments is calculated, and the optical axis of the Bure amendment optical system is changed based on relative Bure who detected, and the Bure fiducial point, and amends Bure BURESENSA which detects relative Bure, and the fiducial point operation part which calculates the Bure fiducial point based on the output detected by said BURESENSA, The fiducial point memory part which makes the Bure fiducial point with which said BURESENSA was adjusted beforehand

memorize, It is Bure amendment equipment characterized by having the fiducial point setting part which sets up the operation result of said fiducial point operation part as a Bure fiducial point when the difference of the operation result in said fiducial point operation part and the Bure fiducial point memorized by said fiducial point memory part is predetermined within the limits.

[Claim 6] In the Bure amendment equipment which the amount of Bure amendments is calculated, and the optical axis of the Bure amendment optical system is changed based on relative Bure who detected, and the Bure fiducial point, and amends Bure [operation part / which calculates the Bure fiducial point based on the output detected by said BURESENSA / BURESENSA which detects relative Bure, and / fiducial point] when predetermined time passes The Bure amendment equipment characterized by having the fiducial point setting part which is made to suspend the operation of said fiducial point operation part, and sets up the operation result at the time of the stop concerned as a Bure fiducial point

---

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the Bure amendment equipment which calculates the amount of Bure amendments from relative Bure's output which the Bure detection sensor detected especially about the Bure amendment equipment which amends Bure resulting from vibration of Optical Apparatus Sub-Division, such as a camera.

[0002]

[Description of the Prior Art] Conventionally, when this kind of Bure amendment equipment carries out shift migration of the Bure correcting lens in the right-angled direction of a field to the optical axis of an optical system based on the amount of Bure amendments, the method which performs Bure amendment (henceforth VR) is put in practical use.

[0003] Said amount of Bure amendments detects the angle of vibration which VR sensor produces, for example in Optical Apparatus Sub-Division, such as a camera, angular velocity, angular acceleration, etc., and this as a relative angle, angular velocity, angular acceleration, etc. Based on an angle, angular velocity, angular acceleration (henceforth the Bure fiducial point), etc. used as a standard, it asks by calculating. Therefore, in order to calculate the amount of Bure amendments, it is necessary to calculate the Bure fiducial point. In addition, VR sensor vibrates the oscillating part in a sensor with predetermined vibration frequency, and detects the rotational movement produced by vibration of the main part of Bure amendment equipment as Coriolis force.

[0004] And each of the output at the time of being in the state in which the main part of Bure amendment equipment stood it still, if this Bure fiducial point is calculated most simply, i.e., an

angle, angular velocity, angular acceleration, etc. is the outputs at the time of 0, and it can ask for this output, for example by fixing Optical Apparatus Sub-Division, such as a camera, with a tripod etc. However, it is not realistic to perform this for every photography.

[0005] Therefore, conventional Bure amendment equipment was calculating the Bure fiducial point by calculating full power after electric power is supplied to VR sensor, for example at the time of photography with a camera until it starts exposure, and equalizing this.

[0006] Moreover, for example at the time of factory shipments, the Bure fiducial point measures the output of a state of rest for every VR sensor, and can consider making the memory part which prepared this value in Optical Apparatus Sub-Division, such as a camera, memorize.

[0007]

[Problem to be solved by the invention] In calculating the Bure fiducial point, the conventional Bure amendment equipment mentioned above had the following technical problems.

[0008] In order that it may vibrate the oscillating part in a sensor and may detect Bure as mentioned above, this vibration becomes fixed, and by the time the output of VR sensor is stable, it will require a certain amount of time. For this reason, even when any of the equalized above-mentioned Bure fiducial point or the Bure fiducial point which the memory part was made to memorize are used before the output of the sensor was stabilized, high-precision Bure cannot be amended but Bure may be increased on the contrary. Therefore, an exposure start must be stood by and it is necessary to continue supplying electric power to VR sensor in the meantime until fixed time to stabilize the output of a sensor passes after electric power is supplied to VR sensor in order to perform higher-precision Bure amendment.

[0009] However, since there is a limitation in the power supply of Optical Apparatus Sub-Division, such as a camera, and there are various restrictions for every model of the further, it is difficult to continue supplying electric power to VR sensor as mentioned above.

[0010] Moreover, although the operation of said Bure fiducial point is performed by the central arithmetic unit (henceforth CPU) with which Optical Apparatus Sub-Division, such as a camera, was equipped, the throughput of this CPU also has restrictions. That is, CPU is difficult to gather the speed of said operation which becomes complicated and to calculate the Bure fiducial point for a short time in order to also process the operation of AE or AF. Furthermore, if the manufacturing cost of Optical Apparatus Sub-Division, such as a camera, and the size of a main part are taken into consideration, the throughput of CPU cannot be raised substantially, either.

[0011] Therefore, the conventional Bure amendment equipment mentioned above had the problem of applying a burden to CPU while it had to work VR sensor over the long time and consumed electric power remarkably as a result, in order to perform higher-precision Bure amendment. Moreover, the case where high-precision Bure amendment does not need to be

performed in order for the conventional Bure amendment equipment mentioned above to equip Optical Apparatus Sub-Division, such as a camera, with this, for example, to turn off the high-speed shutter, Or there was a problem that Bure amendment based on the photography person's intention could not be performed to suppress consumption of electric power, and the burden to CPU.

[0012] The 1st technical problem of this invention is offering the Bure amendment equipment which suppressed consumption of electric power, or the burden to CPU by performing a setup of the Bure fiducial point for calculating the amount of Bure amendments for a short time, maintaining a certain amount of accuracy. The 2nd technical problem of this invention is offering the Bure amendment equipment which can choose the Bure fiducial point for calculating the amount of Bure amendments based on a photography person's will, in order to suppress consumption of electric power, or the burden to CPU, corresponding to the situation of photography.

[0013]

[Means for solving problem] In order to solve said technical problem, [invention of Claim 1] In the Bure amendment equipment which the optical axis of the Bure amendment optical system is changed by making the relative value of the Bure fiducial point into the amount of Bure amendments, and amends Bure BURESENSA which detects Bure, and the fiducial point operation part which calculates the Bure fiducial point based on the output detected by said BURESENSA, It is characterized by having the fiducial point memory part which makes the Bure fiducial point with which said BURESENSA was adjusted beforehand memorize, and the fiducial point setting part which chooses either said fiducial point operation part or said fiducial point memory parts, and sets up said Bure fiducial point.

[0014] Invention of Claim 2 is characterized by said fiducial point setting part setting up said Bure fiducial point based on the information about the residue of a power supply in Bure amendment equipment according to claim 1.

[0015] Invention of Claim 3 is characterized by said fiducial point setting part setting up said Bure fiducial point based on the information about the throughput of a central arithmetic unit in Bure amendment equipment according to claim 1.

[0016] Invention of Claim 4 is characterized by said fiducial point setting part setting up said Bure fiducial point based on manual input information in Bure amendment equipment according to claim 1.

[0017] In the Bure amendment equipment which invention of Claim 5 makes the relative value of the Bure fiducial point the amount of Bure amendments, and the optical axis of the Bure amendment optical system is changed, and amends Bure BURESENSA which detects Bure, and the fiducial point operation part which calculates the Bure fiducial point based on the output detected by this BURESENSA, The fiducial point memory part which makes the Bure

fiducial point with which said BURESENSA was adjusted beforehand memorize, When the difference of the operation result in said fiducial point operation part and the Bure fiducial point memorized by said fiducial point memory part is predetermined within the limits, it is characterized by having the fiducial point setting part which sets up the operation result of said fiducial point operation part as a Bure fiducial point.

[0018] In the Bure amendment equipment which invention of Claim 6 makes the relative value of the Bure fiducial point the amount of Bure amendments, and the optical axis of the Bure amendment optical system is changed, and amends Bure [operation part / which calculates the Bure fiducial point based on the output detected by this BURESENSA / BURESENSA which detects Bure, and / fiducial point] when predetermined time passes The operation of said fiducial point operation part is stopped, and it is characterized by having the fiducial point setting part which sets up the operation result at the time of the stop concerned as a Bure fiducial point.

[0019]

[Mode for carrying out the invention]

(The 1st embodiment) The form of implementation of invention is explained in more detail hereafter, referring to Drawings etc. Drawing 1 is the block diagram showing the 1st embodiment of the Bure amendment equipment by this invention. This embodiment shows the case where a camera is equipped with the Bure amendment equipment by this invention. The camera of this embodiment is constituted by the camera body 1 and the lens 2, and [the camera body 1] The half-press switch (S1) which makes photography preparations of shutter speed, regulation of a focal length, etc. by half press of the main switch Msw which switches on a power supply, and a release button, and the full-press switch (S2) which performs release operation and starts exposure by full press are formed.

[0020] Moreover, the camera body 1 is equipped with Bure amendment equipment 10, automatic exposure equipment 20, and automatic-focusing adjustment 30 grade. In Bure amendment equipment 10, the VR sensor 11 is a portion which detects the posture (a position, speed, acceleration, an angle, angular velocity, angular acceleration) of the camera in a moment.

[0021] Moreover, the drive circuit control part 12 is equipped with the fiducial point operation part 12a, the fiducial point memory part 12b, and the fiducial point setting part 12c. The fiducial point operation part 12a is a portion which calculates the Bure fiducial point based on the output which said VR sensor 11 detected. The Bure fiducial point which the fiducial point memory part 12b is a portion which makes the Bure fiducial point adjusted beforehand memorize, for example, was calculated from the output of the VR sensor 11 in a state of rest is memorized. The fiducial point setting part 12c is a portion which chooses the Bure fiducial point used as the standard for calculating the amount of Bure amendments, and the residue of

the power supply 4 of the camera body 1 [in more than fixed] The Bure fiducial point calculated by the fiducial point operation part 12a is chosen, and, in below fixed, the Bure fiducial point memorized by the fiducial point memory part 12b is chosen [invention of Claim 2].

[0022] Moreover, the fiducial point setting part 12c chooses the Bure fiducial point memorized by the fiducial point memory part 15, when choosing the Bure fiducial point detected by the detection sensor 11 when a margin was in the throughput of CPU3 and it is hard-pressed [invention of Claim 3].
[0023] The drive circuit control part 12 calculates the amount of drives of VR lens (un-illustrating) and drive speed, and a driving direction based on the Bure fiducial point chosen by said fiducial point setting part 12c, drives VR lens actuator 14 through VR lens drive circuit 13, and moves VR lens. In addition, the amount detecting element 15 of VR lens movements is a portion which detects the movement magnitude of VR lens with an encoder etc.
[0024] By the AE sensor 21, detect automatic exposure equipment 20 and the quantity of light of a photographic subject [with the drive circuit control part 22] While calculating a proper light exposure, driving the diaphragm blade actuator 24 through the diaphragm blade drive circuit 23 and moving a diaphragm blade (un-illustrating), through the shutter drive circuit 25, the shutter actuator 26 is driven, a shutter (un-illustrating) is moved, and it exposes on a non-illustrated film.
[0025] By the AF sensor 31, the automatic-focusing adjustment 30 detects the distance to a photographic subject, or phase contrast, by the drive circuit control part 32, calculates the amount of focus drives, drives the focus lens actuator 34 through the focus lens drive circuit 33, and focuses by moving a focus lens (un-illustrating).
[0026] Drawing 2 is a flow chart which shows the 1st embodiment of the Bure amendment equipment by this invention. This embodiment shows the case where a camera is equipped with the Bure amendment equipment by this invention. Although the following operation is performed by one CPU3, each function of the drive circuit control parts 12, 22, and 32 shown in drawing 1 is explained as what is performed by assigning. If a main switch Msw is turned on (S101:Yes) and the half-press switch S1 is turned on (S102:Yes) A power supply is supplied to each sensors 11, 21, and 31 of VR, AE, and AF, detection is started, it calculates based on these outputs, the drive circuit control part 22 determines suitable shutter speed, a drawing value, etc., and the drive circuit control part 32 directs AF drive (S103).
[0027] Here, the drive circuit control part 12 asks CPU3 the residue of the power supply 4 of the camera body 1, or the throughput of CPU3. The fiducial point operation part 12a starts the operation of the Bure fiducial point based on the output detected by (S104:Yes) and the VR sensor 11, when the residue of a power supply 4 is more than fixed, or when a margin is in the throughput of CPU3 (S105). The operation of the Bure fiducial point is performed by equalizing

all the outputs after the VR sensor 11 starts detection until it starts exposure. In order that this operation may raise the accuracy of the Bure fiducial point, the half-press switch S1 is continuously performed between half-press states.

[0028] Moreover, when the residue of a power supply 4 is below fixed, or when there is no margin in the throughput of CPU3, the Bure fiducial point memorized by (S104:No) and the fiducial point memory part 12b is read (S115).

[0029] That is, the Bure fiducial point is chosen according to the residue of a power supply 4, or the throughput of CPU3, and is set as the fiducial point setting part 12c.

[0030] On the other hand, the drive circuit control part 12 carries out centering of the VR lens toward a predetermined initial position so that the lead in the optical axis of the whole taking lens which is an initial position for the optical axis of (S102) and VR lens to start VR drive with the half-press switch S1 may be taken (S106).

[0031] When the half-press switch S1 continues (S107:Yes) being pushed as it is and the full-press switch S2 is pushed further here (S108:Yes), [the drive circuit control part 12] Based on the output detected by the VR sensor 11, and the Bure fiducial point set as the fiducial point setting part 12c, the amount of drives of VR lens and drive speed, and a driving direction are calculated, and the drive of VR lens actuator 14 is started through VR lens drive circuit 13 (S109). in addition -- the case where half press of the half-press switch S1 is canceled -- (S107:NO), again, it stands by until it is half-pressed (S102:No).

[0032] Subsequently, the drive circuit control part 22 starts the exposure to a film (S110), and ends exposure in predetermined time (S111). And if the drive circuit control part 12 suspends VR drive (S112), CPU3 will start operation of the preparation with which the next photography of feed of a film, shutter charge, a mirror down, etc. was equipped (S113). Then, the current supply to each sensors 11, 21, and 31 is suspended (S114), and photography is ended. In addition, although it explained that it was chosen according to the residue of a power supply 4, or the throughput of CPU3, you may make it choose the Bure fiducial point in (S104) according to the residue of a power supply 4, and the throughput of CPU3, for example.

[0033] (The 2nd embodiment) Drawing 3 is a flow chart which shows the 2nd embodiment of the Bure amendment equipment by this invention. Each embodiment shown below shows the case where a camera is equipped with the Bure amendment equipment by this invention. In addition, each embodiment explained below omits the description with the 1st same embodiment and hard composition which were mentioned above which sake [description], illustrates and overlaps.

[0034] A photography person chooses whether the Bure fiducial point is calculated from the output of the VR sensor 11, or it should memorize in the fiducial point memory part 12b, and the 2nd embodiment enables it to input it into the fiducial point setting part 12c with manual operation [invention of Claim 4].

[0035] That is, after supplying a power supply to each sensors 11, 21, and 31 of VR, AE, and AF and starting detection (S103), the drive circuit control part 12 asks the setting state of the fiducial point setting part 12c. Furthermore, the drive circuit control part 12 reads the Bure fiducial point which calculated the Bure fiducial point from the output of the VR sensor 11 by the fiducial point operation part 12a (S205), or was memorized by the fiducial point memory part 12b based on the setting state of the fiducial point setting part 12c (S215). Then, the drive circuit control part 12 calculates the amount of Bure amendments based on the Bure fiducial point set as the fiducial point setting part 12c.

[0036] In order to turn off the high-speed shutter according to the 2nd embodiment, when high-precision Bure amendment does not need to be performed, the Bure fiducial point can be set up based on a photography person's intention to suppress consumption of electric power, and the burden to CPU.

[0037] (The 3rd embodiment) Drawing 4 is a flow chart which shows the 3rd embodiment of the Bure amendment equipment by this invention. When the Bure fiducial point which started and calculated the operation of the Bure fiducial point based on the output of the VR sensor 11 approaches the Bure fiducial point memorized by the fiducial point memory part 15, the 3rd embodiment ends said operation and makes this value that approached the Bure fiducial point [invention of Claim 5].

[0038] That is, after supplying a power supply to each sensors 11, 21, and 31 of VR, AE, and AF and starting detection (S103), [the drive circuit control part 12] By the fiducial point operation part 12a, the operation of the Bure fiducial point is started based on the output of the VR sensor 11 (S305), and, subsequently to the fiducial point memory part 12b, the memorized Bure fiducial point is read (S315).

[0039] The drive circuit control part 12 ends the operation of the Bure fiducial point at (S317:Yes) and its time, when the difference becomes predetermined within the limits about the calculated Bure fiducial point as compared with the memorized Bure fiducial point (S316) (S318), and it determines the Bure fiducial point (S319).

[0040] In addition, by outputting the time required until a difference with the Bure fiducial point remembered to be the calculated Bure fiducial point becomes predetermined within the limits to the memory part For example, in the Bure amendment equipment of the 4th embodiment which mentions this later, it can be used in order to determine the predetermined time of the Bure fiducial point operation (S417).

[0041] Moreover, for example, the Bure fiducial point which the conditions at the time of photography calculated unlike the conditions at the time of memory etc., When a difference with the memorized Bure fiducial point does not become predetermined within the limits, it is decided by (S317:No) and the full-press switch S2 that they will be (S320:Yes) and the calculated Bure fiducial point in the time (S329). In addition, when the full-press switch S2 is

not pressed fully, the operation of the Bure fiducial point is continued until the aforementioned difference becomes predetermined within the limits (S320:No).

[0042] According to the 3rd embodiment, since it is ended when a difference with the memorized Bure fiducial point becomes predetermined within the limits, the operation of the Bure fiducial point can hold down future power consumption, and also it can turn the throughput of CPU to other processings. Moreover, since the difference with the Bure fiducial point remembered to be the calculated Bure fiducial point does not become predetermined within the limits but it is decided in this case that it will be the Bure fiducial point in alignment with the conditions at the time of photography when the conditions at the time of photography differ from the conditions at the time of memory, high-precision Bure amendment can be carried out.

[0043] Furthermore, after the determination of the Bure fiducial point does not produce an error in the Bure fiducial point by this, unless it is exposure under panning, even if it performs sudden panning, when the output of VR sensor is fully stable.

[0044] (The 4th embodiment) Drawing 5 is a flow chart which shows the 4th embodiment of the Bure amendment equipment by this invention. The 4th embodiment starts the operation of the Bure fiducial point based on the output of the VR sensor 11, ends an operation by progress of predetermined time, and determines the Bure fiducial point [invention of Claim 6].

[0045] That is, after supplying a power supply to each sensors 11, 21, and 31 of VR, AE, and AF and starting detection (S103), the drive circuit control part 12 starts the operation of the Bure fiducial point based on the output of the VR sensor 11 (S405). Then, (S417:Yes) and an operation are ended by progress of predetermined time (S419), and the Bure fiducial point is determined (S419).

[0046] Moreover, when (S417:No) and the full-press switch S2 are pressed fully before going through predetermined time, an operation is ended at (S420:Yes) and its time (S428), and the Bure fiducial point is determined (S429). in addition -- the case where the full-press switch S2 is not pressed fully -- (S420:No) -- the time of a fiducial point operation is measured again (S417).

[0047] Since the operation of the Bure fiducial point is ended by progress of predetermined time according to the 4th embodiment, future power consumption can be held down, and also the throughput of CPU can be turned to other processings.

[0048] Furthermore, after the determination of the Bure fiducial point does not produce an error in the Bure fiducial point by this, unless it is exposure under panning, even if it performs sudden panning, when the output of VR sensor is fully stable.

[0049]
 [Effect of the Invention] Since either the calculated Bure fiducial point or the memorized Bure fiducial point is chosen according to the residue of a power supply, and the throughput of CPU according to this invention as explained in detail above Maintaining a

certain amount of accuracy, the Bure fiducial point can be set up in a short time, and the Bure amendment equipment which suppressed consumption of electric power and the burden to CPU can be offered.

[0050] moreover, since either the calculated Bure fiducial point or the memorized Bure fiducial point can be chosen by a manual input, when this is used for photography equipment, such as a camera, for example In order to suppress consumption of electric power, and the burden to CPU, corresponding to a photographing condition, the Bure fiducial point can be chosen based on a photography person's intention, and the user-friendliness of photography equipment, such as a camera, can be received.

[0051] Furthermore, since said operation is ended at the time and the Bure fiducial point is determined when the difference of the calculated Bure fiducial point and the memorized Bure fiducial point becomes predetermined within the limits, the Bure amendment equipment which suppressed consumption of electric power and the burden to CPU can be offered. Moreover, since the operation of the Bure fiducial point is ended and the Bure fiducial point is determined by progress of predetermined time, the Bure amendment equipment which suppressed consumption of electric power and the burden to CPU can be offered.

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram having shown the 1st work example at the time of equipping a camera with the Bure amendment equipment by this invention.

[Drawing 2] It is the flow chart showing operation of the Bure amendment equipment concerning the 1st work example.

[Drawing 3] It is the flow chart showing operation of the Bure amendment equipment concerning the 2nd work example.

[Drawing 4] It is the flow chart showing operation of the Bure amendment equipment concerning the 3rd work example.

[Drawing 5] It is the flow chart showing operation of the Bure amendment equipment concerning the 4th work example.

[Explanations of letters or numerals]

1 Camera 2 Lens

3 CPU 4 Power Supply

10 Bure Amendment Equipment 11 VR Sensor

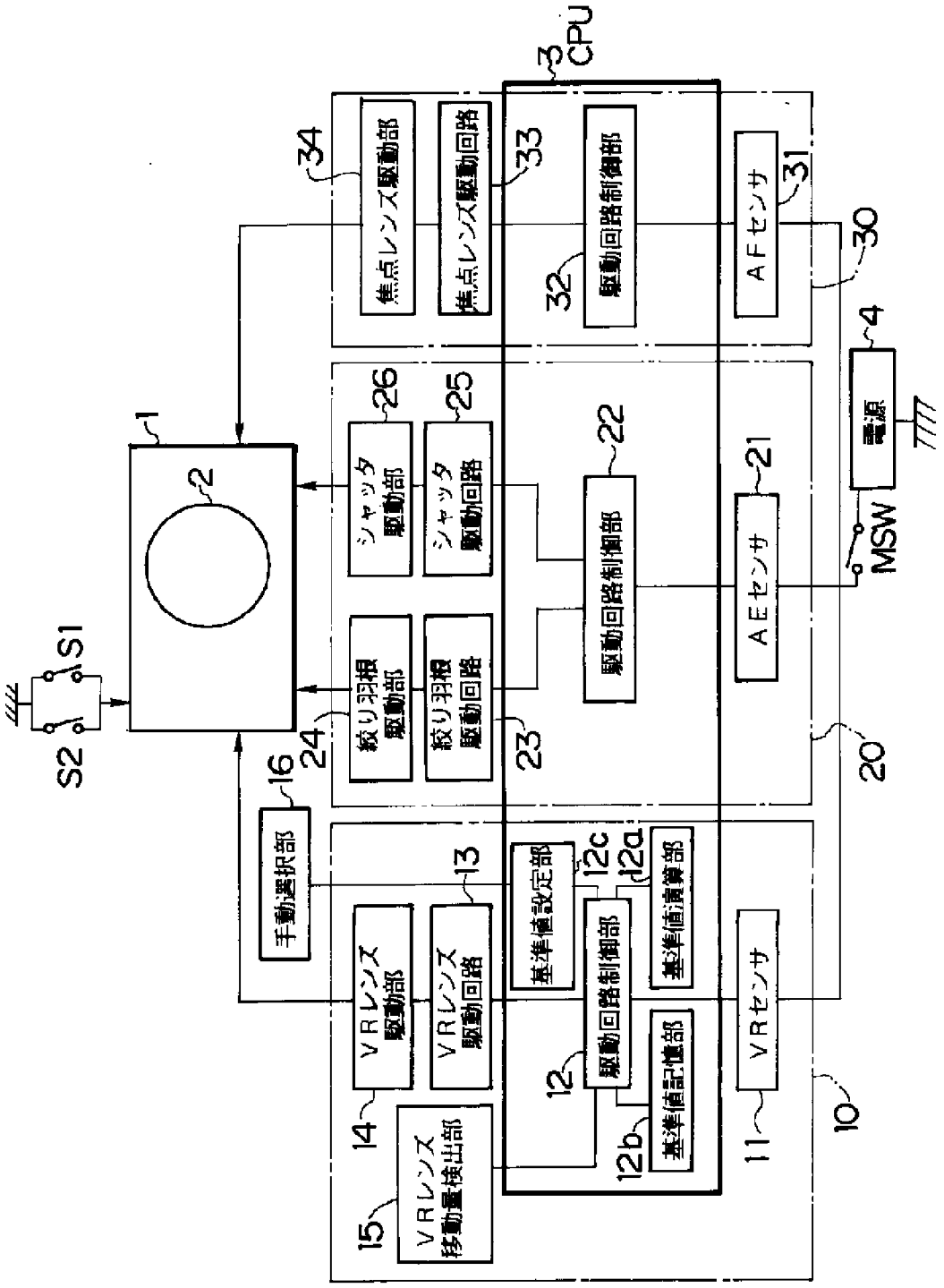
12 Drive Circuit Control Part 12a Fiducial Point Operation Part

12b Fiducial point memory part 12c Fiducial point setting part

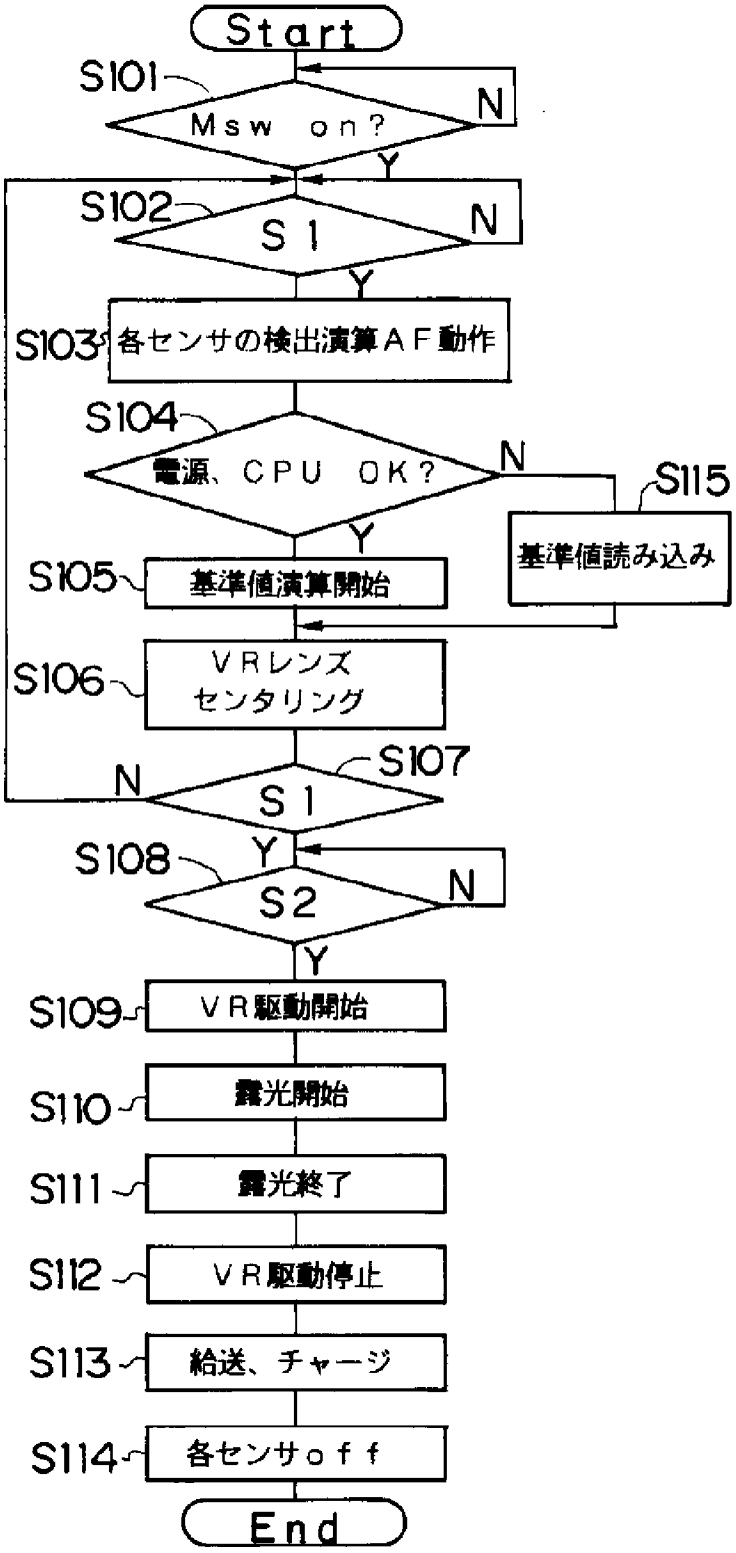
13 VR Lens Drive Circuit 14 VR Lens Actuator

15 Amount Detecting Element of VR Lens Movements 16 Manual Selection Part
20 Automatic Exposure Equipment 21 AE Sensor
22 Drive Circuit Control Part 23 Diaphragm Blade Drive Circuit
24 Diaphragm Blade Actuator 25 Shutter Drive Circuit
26 Shutter Actuator 30 Automatic-Focusing Adjustment
31 AF Sensor 32 Drive Circuit Control Part
33 Focus Lens Drive Circuit 34 Focus Lens Actuator

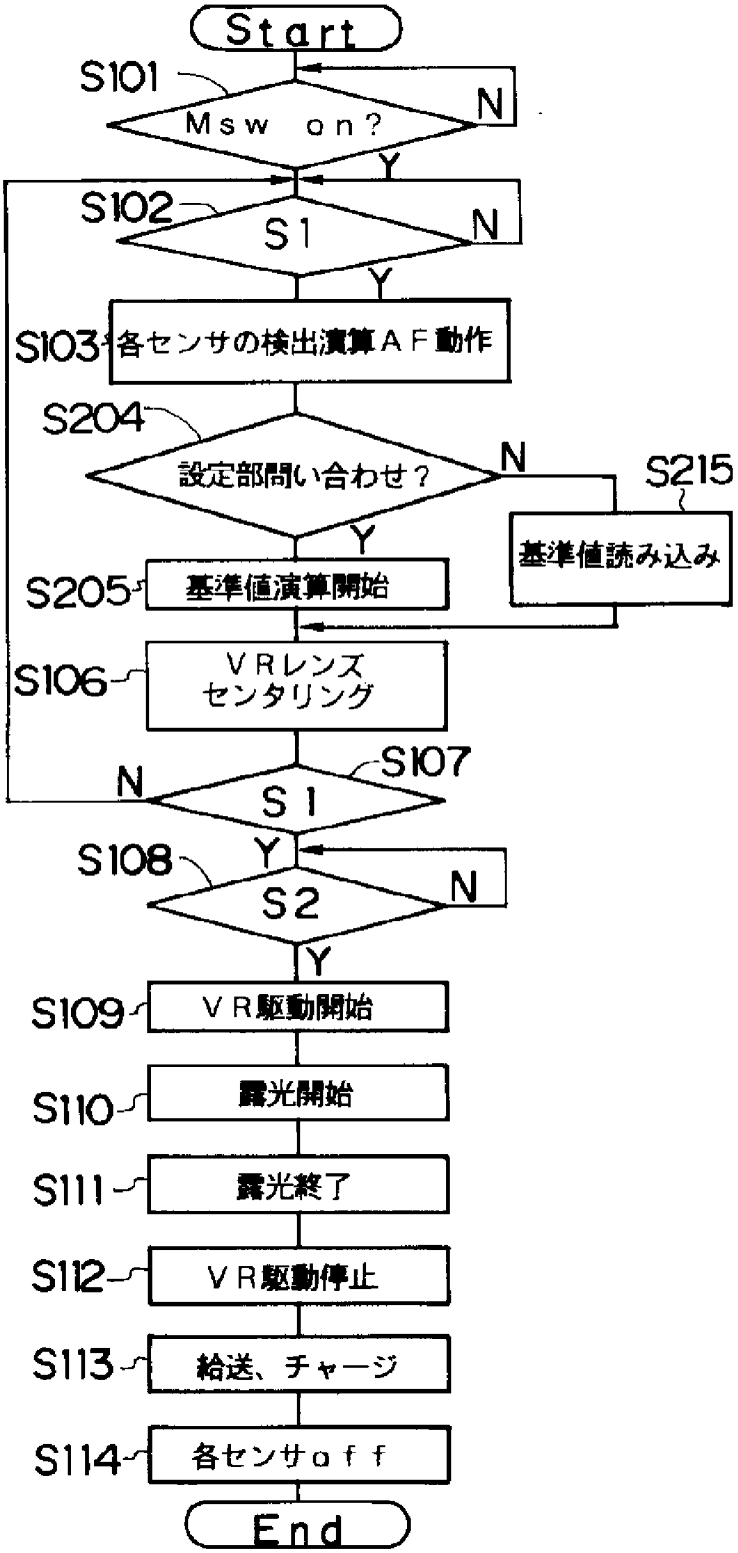
[Drawing 1]


CPU
焦点レンズ駆動部
焦点レンズ駆動回路
駆動回路制御部
AFセンサ
電源
シャッタ駆動部
シャッタ駆動回路
絞り羽根駆動部
絞り羽根駆動回路
駆動回路制御部
AEセンサ
MSW
S1
S2
手動選択部
VRレンズ駆動部
VRレンズ駆動回路
基準値設定部
基準値演算部
駆動回路制御部
基準値記憶部
VRセンサ
VRレンズ移動量検出部

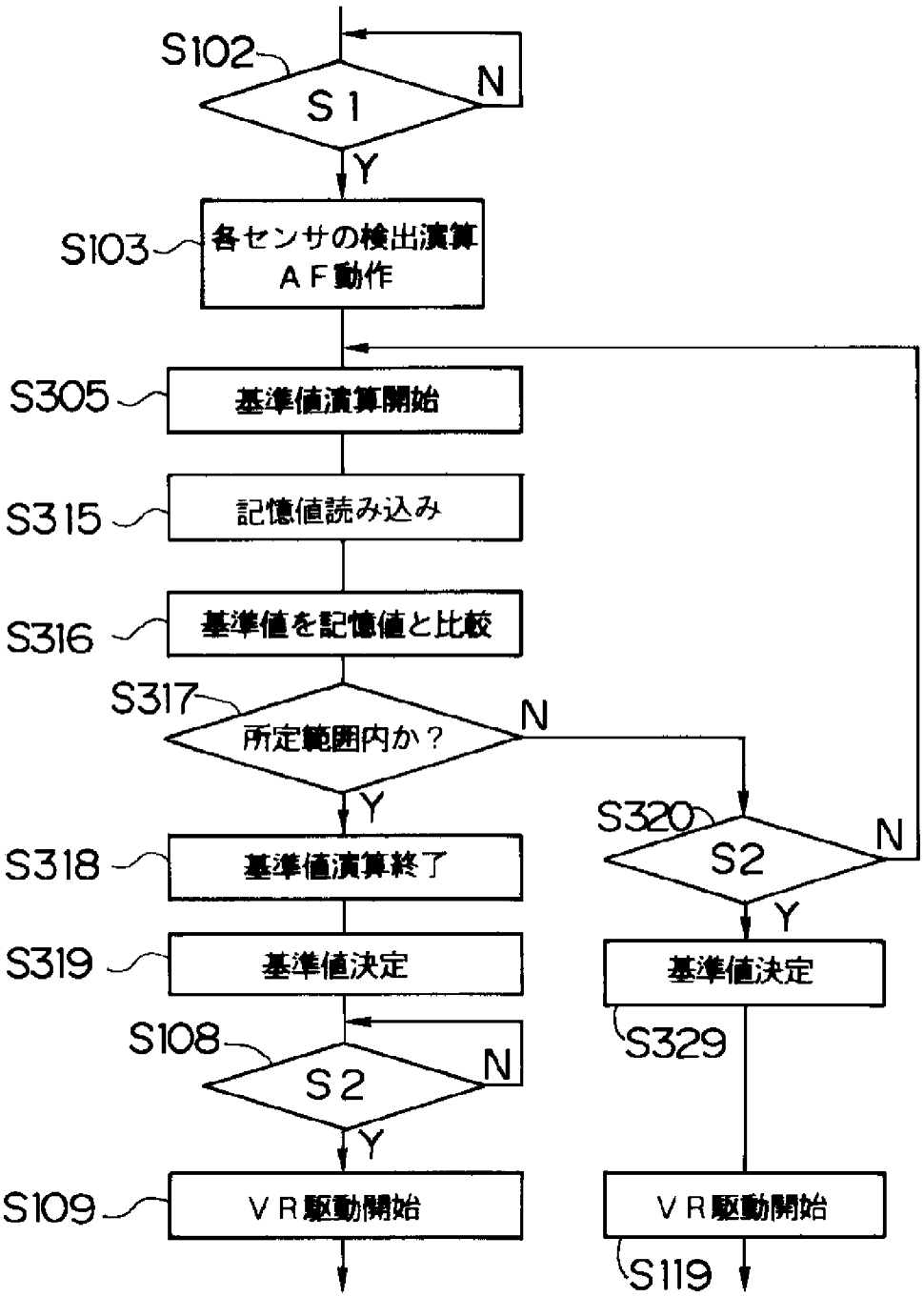
[Drawing 2]


Start
S101
Msw on?
N
Y
S102
S1
N
Y
S103
各センサの検出演算ＡＦ動作
S104
電源、CPU OK?
N
Y
S115
基準値読み込み
S105
基準値演算開始
S106
VRレンズ
センタリング
S107
N
S1
S108
Y
S2
N
Y
S109
VR駆動開始
S110
露光開始
S111
露光終了
S112
VR駆動停止
S113
給送、チャージ
S114
各センサｏｆｆ
End

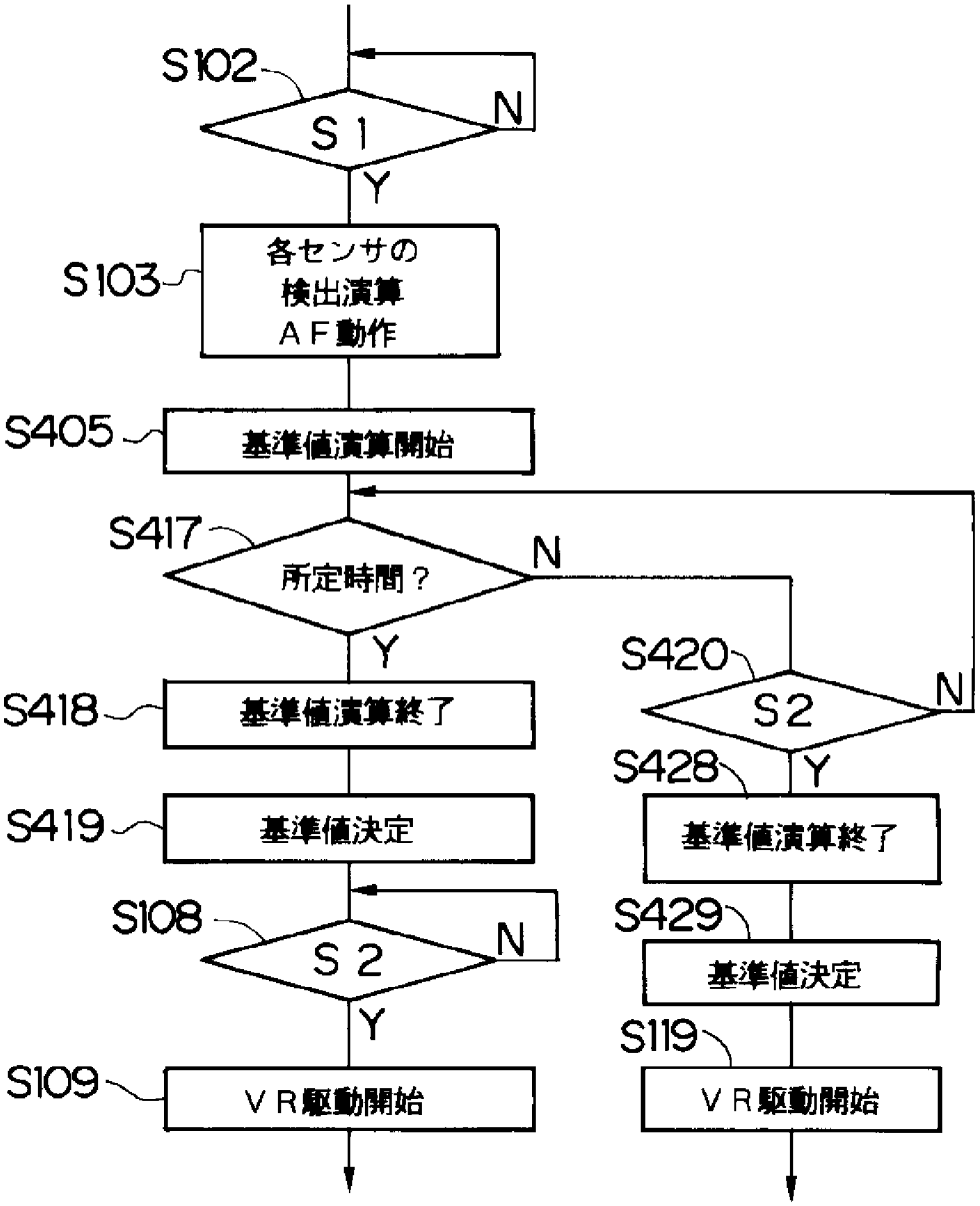
[Drawing 3]


Start
S101
Msw on?
N
Y
S102
S1
N
Y
S103
各センサの検出演算ＡＦ動作
S204
設定部問い合わせ？
N
S215
基準値読み込み
Y
S205
基準値演算開始
S106
ＶＲレンズ
センタリング
S107
N
S1
S108
Y
S2
N
Y
S109
ＶＲ駆動開始
S110
露光開始
S111
露光終了
S112
ＶＲ駆動停止
S113
給送、チャージ
S114
各センサｏｆｆ
End

[Drawing 4]


S102
S1
N
Y
S103
各センサの検出演算
ＡＦ動作
S305
基準値演算開始
S315
記憶値読み込み
S316
基準値を記憶値と比較
S317
所定範囲内か？
N
Y
S318
基準値演算終了
S319
基準値決定
S108
S2
N
Y
S109
ＶＲ駆動開始
S320
S2
N
Y
基準値決定
S329
ＶＲ駆動開始
S119

[Drawing 5]



[Translation done.]